DRAFT STAFF PROPOSAL
Rev. 12-12-05

GENERAL ORDER NO. 75-D
(Supersedes G.O. No. 75-C)

PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

REGULATIONS GOVERNING THE INSTALLATION OF WARNING DEVICES FOR AT-GRADE HIGHWAY-RAIL CROSSINGS IN THE STATE OF CALIFORNIA

Adopted_____. Effective _____.
(Resolution No. _____)

IT IS HEREBY ORDERED by the Public Utilities Commission of the State of California, that the following regulations governing the installation of warning devices for at-grade highway-rail crossings (where a railway crosses a highway, street, road, pedestrian/bicycle path, or any other pathway), hereinafter referred to as crossings, be observed in this State unless otherwise authorized or directed by the Commission. (Issued in accordance with Sections 768, 778, 1202, 7537 and 99152 of California Public Utilities Code).

1. PURPOSE OF RULES

The purpose of these rules is to formulate uniform standards for installation of warning devices on approaches to crossings in the State of California, the application of which may afford greater safety at crossings. All references in this General Order (GO) to crossing approaches refer to the non-track approaches to the crossing.

2. SCOPE OF RULES

These rules are not intended as complete construction specifications. Construction shall be according to accepted best practices for the given local conditions in all particulars not specified in the rules. Unless otherwise provided in these rules, this order shall not be retroactive with respect to crossings lawfully existing on its effective date, except that the Commission reserves the right to require, by appropriate proceedings, alterations or improvements at any such crossings.

3. POLICY ON REDUCING NUMBER OF AT-GRADE CROSSINGS

It is the Commission's policy to reduce the number of at-grade crossings in California. This policy will be adhered to more strictly for crossings involving track classified as mainline, particularly those with multiple tracks or operated over by passenger trains.

4. AREMA AND MUTCD STANDARDS

4.1 All crossing warning devices shall conform to the American Railway Engineering and Maintenance of Way Association (AREMA) "Communications and Signals Manual of Recommended Practices." Where an AREMA recommended practice conflicts with this GO, the requirements of this GO shall apply.

4.2 The Manual on Uniform Traffic Control Devices (MUTCD) published by the Federal Highway Administration, as amended by the MUTCD California Supplement published

by the California Department of Transportation (Caltrans), prescribes uniform standards and specifications for all official traffic control devices in California. All references herein to the MUTCD refer to the MUTCD as amended by the California Supplement.

5. IDENTIFICATION OF PUBLIC CROSSINGS

5.1 Each crossing used by the public shall have the following information posted conspicuously and legibly at the crossing by the entity responsible for the maintenance of the crossing:

a) number that uniquely identifies the crossing
b) roadway name, where applicable
c) rail milepost
d) emergency phone number

5.2 In all matters pertaining to any crossing brought to the attention of the Commission, reference shall be given to the Commission assigned crossing number.

5.3 Section 5.1 does not apply to crossings exempted from the requirements of Section 6.

6. STANDARD CROSSING WARNING DEVICES

Prior to opening a crossing, standard crossing warning devices described below shall be installed, as authorized by the Commission.

6.1 *Standard 1-R.* A Crossbuck (defined as R15-1 in the MUTCD) installed on a retroreflectorized wood or metal post. See Figure ___ for additional specifications.

6.2 *Standard 8.* An automatic flashing light signal assembly which, by alternately flashing red lights facing each approach, provides a warning of an approaching train. A Crossbuck shall be installed on the mast. See Figure ___ for additional specifications.

6.3 *Standard 8-A.* A Standard 8 with a cantilever mounted on a mast with additional flashing lights over the roadway on the cantilever arm. See Figure ___ for additional specifications.

6.4 *Standard 9.* An automatic gate arm used in combination with a Standard 8. The gate mechanism may be mounted on the Standard 8 mast or separately on an adjacent pedestal. The automatic gate shall be designed to fail in the down position. A Crossbuck shall be installed on the mast. See Figure ___ for additional specifications.

Exit Gate

A Standard 9 may be installed on the departure side of the crossing (also known as an exit gate) in addition to the typical approach side of the crossing (also known as an entrance gate). Exit gates shall operate in the following manner:

a) Exit gates shall be designed to fail in the up position.

b) Entrance gates shall begin their descent before exit gates and shall be horizontal before the exit gates are horizontal.
c) A vehicle presence detection system shall be installed whenever exit gates are used. The system shall be designed such that it prevents vehicles from getting trapped on the tracks between the entrance and exit gates.
d) Exit gates shall be equipped with both front and back flashing light signals.

6.5 *Standard 9-A.* A Standard 9 with a cantilever mounted on a mast with additional flashing lights over the roadway on the cantilever arm. See Figure ___ for additional specifications.

6.6 *Standard 11.* A pedestrian pull-gate, also referred to as a swing-gate, designed to open away from the tracks and automatically close when released. See Figure ___ for additional specifications.

7. PRIVATE CROSSINGS

7.1 A crossing is considered private when the approaches to the crossing are privately owned, the general public is not permitted access, and there exists a written agreement for the crossing.

7.2 *Standard 1-X.* "PRIVATE CROSSING" sign shall be installed at all private crossings. See Figure ___ for additional specifications.

7.3 At all approaches to private crossings there shall be installed either a STOP sign (defined as a Standard R1-1 in the MUTCD) or an automatic crossing warning device described in Sections 6.1 through 6.5.

If a STOP sign is used, the Standard 1-X sign shall be mounted on the post below it.

If a Standard 8, 8-A, 9, or 9-A device is used, the Standard 1-X sign shall be attached to the mast of the warning device below the flashing light signals. See Figure ___ for additional specifications.

7.4 The language contained in the lower portion of the "PRIVATE CROSSING" sign shown in Figure ___, commencing with and including the words "No Trespassing", shall be permitted at the option of the railroad.

7.5 Pursuant to Public Utilities Code Section 7537, the Commission has the authority to determine the necessity for any private railroad crossing and the place, manner, and conditions under which the crossing shall be constructed and maintained, and to fix and assess the cost and expense thereof, and the Commission will exert such jurisdiction when it is either petitioned by one of the parties or Commission staff determines it is necessary.

8. AUTOMATIC CROSSING WARNING DEVICES - GENERAL REQUIREMENTS

8.1 *Crossing Warning Devices to Conform to Commission Standards.* All automatic crossing warning devices hereinafter installed shall, unless otherwise authorized by the Commission, conform to the specifications shown in Figures ___ through ___. This rule is not to be construed as prohibiting automatic crossing warning devices of a different type installed in accordance with previous orders of this Commission (former Commission Standards 3 through 7, and 10) nor shall it be construed as prohibiting the replacement in kind or the relocation of such signals at a particular crossing.

8.2 *Warning Device Activation Time Limits*. Automatic crossing warning devices shall be actuated by approaching trains through track circuits or by electronic controls for approximately 25 seconds with limits of from 20 to 30 seconds in advance of the arrival of the train at the crossing. Prolonged signal operation caused by standing trains or by open switches within the signal limits of the crossing control circuits must be avoided. Automatic crossing warning devices shall remain active until the rear of the train clears the crossing. When the train clears the crossing, and if no other train is detected, the gate arms shall ascend to their upright positions, following which the flashing lights, bells, and the lights on the gate arms shall cease operation.

8.3 *Failure of Controls.* Automatic crossing warning devices shall be installed so that failure of controls or other apparatus will result in the activation of the warning devices (see exception for exit gates in Section 6.4).

8.4 *Manual Control May Be Used When Necessary.* At locations where numerous switching movements or other conditions would cause automatic crossing warning devices to activate unnecessarily or to an unreasonable extent, the automatic crossing warning devices may be supplemented by manual control governed by a flagman, or manual operation of the automatic warning device to reduce abnormal warning device activation. Crossing warning devices so equipped shall be automatically controlled during other periods.

8.5 *Color of Masts.* Masts, assemblies, and cantilevered structures of flashing light signals shall be painted silver, except those parts functioning as a background for the light signal indications (see Section 8.6).

8.6 *Flashing Light Signals:* Lenses and roundels shall be 12 inches in diameter and shall be properly hooded. Light emitting diode (LED) arrays shall be used for all flashing light signals. Hoods and backgrounds shall be painted non-reflecting black. Backgrounds shall be 24 inches in diameter.

8.7 *Audible Warning Devices:* Bells or other audible warning devices shall be included in all automatic crossing warning device assemblies and shall be operated in conjunction with the flashing light signals to provide additional warning for vehicles, pedestrians and

bicyclists. See AREMA for specifications. See exception in Section 9 regarding optional usage of audible warning devices on warning devices installed on raised island medians.

8.8 *Gate Arms:* Gate arms shall be fully retroreflectorized on both sides and have stripes as specified by the MUTCD. The gate arms shall have at least three red lights. A steadily burning red light shall be installed on the end of the gate arm, and two or more alternately flashing red lights shall be installed on the gate arm to provide warning of an approaching and passing train. Gate arms shall be in a horizontal position at least five seconds prior to the arrival of a train.

When the gates are fully lowered the gap between the ends of two complimentary gates must be less than two feet. If there is a median, center-lane striping, or other form of channelization installed, the gap between the gate end and the channelization device must be within one foot.

8.9 *Traffic Signal Interconnection.* At crossings where vehicular traffic queues from traffic signal-controlled intersections exceed the "clear storage distance" as defined in the MUTCD, the traffic signals shall be interconnected with the crossing warning devices for preemption.

8.10 *Clearance Requirements.* Figures ___ through ___ specify distances crossing warning devices must be installed from tracks. Unless otherwise specified in the figures, the distances are measured from centerline of the crossing warning device mast to the centerline of tracks nearest to the device.

8.11 *Sightlines for Crossing Warning Devices.* Sightlines along the crossing approaches to crossing warning devices shall not be obstructed.

8.12 *Parking Prohibition Near Tracks.* Parking must be prohibited a distance no less than 15 feet from the nearest track on all sides of a crossing.

9. LOCATION OF CROSSING WARNING DEVICES

9.1 Unless otherwise ordered by the Commission, crossing warning devices shall be located in a conspicuous position on all approaches to the crossing on the right-hand side of traffic flow and in advance of the track (see exception regarding installation of exit gates in Section 6.4).

9.2 Additional crossing warning devices may be installed on raised island medians. At crossings where warning devices are installed on the right-hand side of traffic flow, backlights or audible warning devices are not required on median-mounted warning devices, except for exit gates installed on raised island medians which are required to be equipped with both front and back flashing light signals (see Section 6.4).

9.3 All automatic crossing warning devices may be placed on the same side of the track where traffic is one way only.

10. CROSSINGS REQUIRED TO BE EQUIPPED WITH AUTOMATIC GATES

10.1 At grade-crossings on a mainline with two or more tracks shall be equipped, at a minimum, with automatic gates and flashing light signals.

10.2 The rule in Section 10.1 regarding requiring automatic gates shall apply to all at-grade crossings ten years after the effective date of this GO.

11. ADDITIONAL CROSSING WARNING SIGNS

11.1 *Advance Warning Signs.* Refer to the MUTCD for requirements on advance warning signs, such as W-10 series, and pavement markings, such as stop lines and RXR markings.

11.2 *"DO NOT STOP ON TRACKS" sign.* At crossings where vehicular traffic queues from nearby intersections exceed the "clear storage distance" as defined in the MUTCD, the "DO NOT STOP ON TRACKS" sign (defined as R8-8 sign in the MUTCD) shall be installed.

11.3 *Number of Tracks Signs.* The sign defined as Standard R15-2 in the MUTCD (Number of Tracks sign in inverted T-shape) shall be installed beneath each Crossbuck where there are two or more tracks at a crossing. See Figure ___ for usage specifications.

The sign defined as CA Code W48 in the MUTCD (Number of Tracks sign) shall be installed below each W10 series advance warning sign where there are two or more tracks at a crossing. See Figure ___ for usage specifications.

11.4 *Standard 1-D.* "PEDESTRIANS AND BICYCLES ONLY" in black lettering on a rectangular sign with a retroreflectorized white background shall be posted at crossings exclusively used by pedestrians and/or bicyclists.

If a Standard 1-R sign is used, the Standard 1-D sign shall be mounted on the post below the Crossbuck. If an R15-2 sign is used in combination with the Standard 1-R, the Standard 1-D sign shall be placed below the R15-2 sign.

If a Standard 8, 8-A, 9, or 9-A device is used, the Standard 1-D sign shall be attached to the mast of the warning device below the flashing light signals. See Figure ___ for additional specifications.

11.5 *Exempt Crossing Signs.* Use in accordance with GO 145 and California Vehicle Code Section 22452 at crossings that have been declared exempt by Order of the Commission.

11.6 *Auxiliary Signs and Signals.* Auxiliary signs and signals not included in the above, such as "No Right Turn", "No Left Turn" or train-activated devices, may be used in conjunction with any of the above signs and signals, in accordance with the MUTCD or as otherwise authorized by the Commission.

12. MAINTENANCE OF CROSSING WARNING DEVICES

12.1 If a crossing warning sign or automatic warning device has been damaged, removed, or otherwise unintentionally rendered inoperative, it shall be brought into normal operating condition or reinstalled within a reasonable amount of time. See Title 49 of Code of Federal Regulation (CFR), Section 234.105.

12.2 Entities responsible for the maintenance of a crossing, that are not regulated by the Federal Railroad Administration (such as light rail transit agencies), shall comply with the flagging rules provided in Title 49 CFR, Section 234.105.

12.3 Trains shall be flagged if crossing warning devices are missing or inoperative.

13. MODIFICATIONS OF CROSSING WARNING DEVICES

13.1 The removal, reduction, addition, or change in type of crossing warning devices, including train detection circuitry that may effect interconnections with adjacent traffic signals, or any other modification that may impact the safety of the crossing, including modifications to crossing approaches such as changing the configuration of travel lanes or changes to the operations of traffic signals, shall not be permitted unless authorized by the Commission. (See General Order 88)

13.2 Upon completion of any approved changes in warning devices, notice of such change shall be submitted to the Commission within 30 days following the effective date of the change. The report shall be on the Commission's Form G.

14. ELIMINATION OF AT-GRADE CROSSING

14.1 A Commission's Form G shall be submitted to Commission staff within 30 days following the elimination of an at-grade crossing.

14.2 All crossing warning devices shall be removed within 60 days after termination of train operations over a crossing. The entity responsible for the maintenance of crossing warning devices immediately prior to the termination of train operations shall be responsible for the removal of the crossing warning devices.

15. EXEMPTIONS

15.1 If, in a particular case, exemption from any of the requirements herein is desired, the Commission will consider the exemption when accompanied by a full statement of the existing conditions and a justification for the exemption. Any exemption so granted shall be limited to the particular case.

15.2 Nothing herein shall be construed as limiting the trial installation of experimental warning devices, provided the Commission has approved such plan in advance of the time the device is installed.

15.3 The Commission reserves the right to modify any of the provisions of these rules in specific cases, when, in the Commission's opinion, public interest would be served by so doing.

This order shall be effective on and after the **[date]**. Approved and dated at San Francisco, California, this **[date]**.

PUBLIC UTILITIES COMMISSION
OF THE- STATE OF CALIFORNIA

By
Executive Director